

NIZAM'S INSTITUTE OF MEDICAL SCIENCES

Punjagutta, Hyderabad – 500 082, Telangana, India.

2016

Question Booklet

Entrance Examination for Admission to **DM / M.Ch**

Cardio Thoracic Surgery

26 June 2016

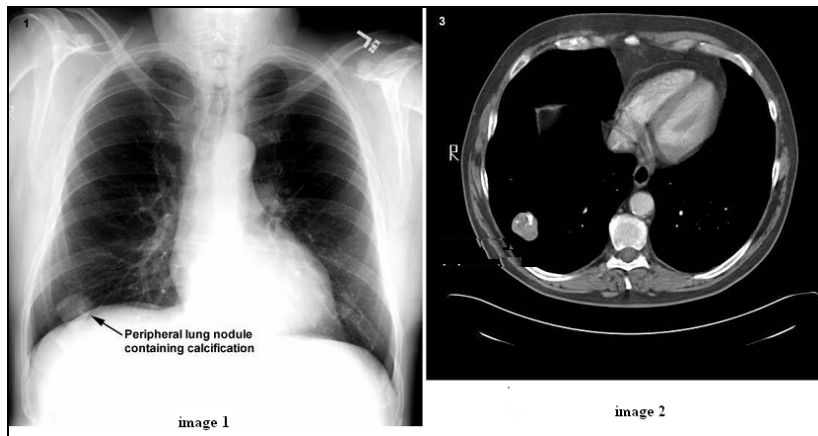
Marks: 90

Time: 01 Hr 30 Min

- Please verify whether the number printed on this question booklet corresponds to your hall-ticket number
- Please read the instructions on the OMR-Answer sheet carefully
- Each question in this booklet is followed by four alternative answers. Select the one that is most appropriate and darken the corresponding oval in the OMR-Answer sheet using an HB Pencil.
- Please return this question booklet along with your OMR-Answer sheet
- Answer sheets not accompanied with the question booklets will not be corrected
- Please mark set as '**A**' under booklet code in the OMR sheet (Side B)
- No negative Marks

- Q1. Regarding the pathology of necrosis, which of the following statements is/are correct?
- 1) The cell size is enlarged
 - 2) The nuclei become pyknotic
 - 3) There is enzymatic digestion with leakage of contents
 - 4) Adjacent inflammation is not seen
- A) Only 1, 2 and 3 is correct
B) Only 1 and 3 is correct
C) Only 2 and 4 is correct
D) Only 4 is correct
- Q2. Hypokalemia with alkalosis is found in
- A) Diarrhoea
B) Vomiting
C) Ureterosigmoidostomy
D) Villous adenoma of rectum
- Q3. **Assertion** : Digitalis can be used to control ventricular rate in patients with atrial fibrillation
Reason : It inhibits Na^+ K^+ ATPase
- A) Both assertion and reason are true and reason is the correct explanation of assertion
B) Both assertion and reason are true and reason is not the correct explanation of assertion
C) Assertion is true but reason is false
D) Assertion is false and reason is true
- Q4. Continuous machinery murmur heard at 2nd left intercostal space suggests
- A) Patent ductus arteriosus
B) Aortic stenosis with aortic regurgitation
C) Pulmonary stenosis with pulmonary regurgitation
D) Ventricular septal defect with aortic regurgitation

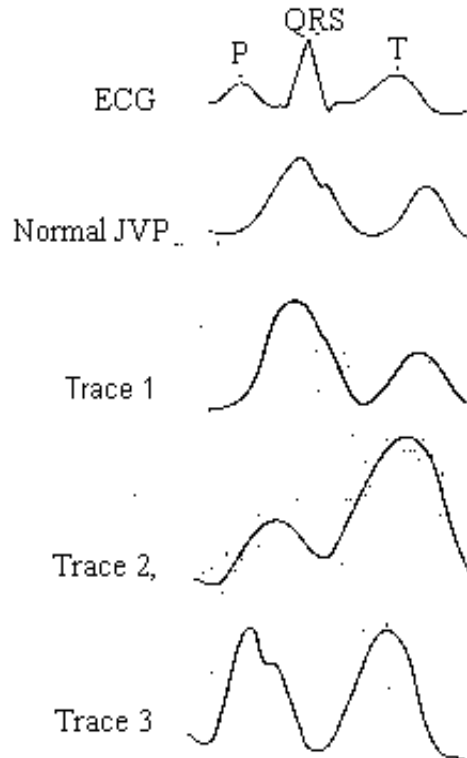
- Q5. The following statements are true regarding Biological valves :
- 1 Homograft valves are removed from cadavers
 - 2 Homograft valves are also known as allograft valves
 - 3 Autografts are the patient's own valves
 - 4 The components of the valves are thrombogenic therefore requiring systemic anticoagulation
- A) Only 1, 2 and 3 are correct
B) Only 1 and 3 are correct
C) Only 2 and 4 are correct
D) Only 4 is correct
- Q6. A patient has hyperphosphatemia with short 4th & 5th metacarpals associated with cataract of both eyes. Which one of the following is the most likely diagnosis?
- A) Hypophosphatasia
B) Pseudohypoparathyroidism
C) Osteomalacia
D) Vitamin D dependent rickets
- Q7. A 60 year old male chronic smoker was found to have the following on routine chest radiograph (Image 1). He was not symptomatic. A CT scan of the chest done three months later is shown below (Image 2). The lesion is most likely to be



- A) Bronchogenic carcinoma
B) Sarcoid nodule
C) Hamartoma
D) Solitary pulmonary metastasis

- Q8. A woman in her seventh month of pregnancy presents to the Emergency department with hypoxemia and left leg swelling. After oxygen administration, which one of the following represents the next step in the management?
- A) Doppler study of leg. then IV heparin if positive
 - B) Spiral CT, then heparin if indicated
 - C) V/Q scan, then heparin if positive
 - D) IV heparin while awaiting radiology
- Q9. In the setting of a large isolated Secundum ASD
- 1 There is dilation of RA and RV
 - 2 Mural thrombus formation in right sided chambers is common
 - 3 The tricuspid and pulmonary annuli become dilated
 - 4 There is massive dilation of LA
- A) Only 1, 2 and 3 are correct
 - B) Only 1 and 3 are correct
 - C) Only 2 and 4 are correct
 - D) Only 4 is correct

Q10. Given below is a normal jugular venous pulse (JVP) trace and three traces (trace 1, 2 and 3) produced by different conditions:



Which one of the following combinations correctly match the traces with conditions producing them

- A) 1 is tricuspid regurgitation (TR), 2 is tricuspid stenosis (TS), and 3 is constrictive pericarditis
 - B) 1 is TS, 2 is TR and 3 is constrictive pericarditis
 - C) 1 is TS, 2 is constrictive pericarditis, and 3 is TR
 - D) 1 is constrictive pericarditis, 2 is TR, and 3 is TS
- Q11. All patients with mechanical valve at mitral position require warfarin and the INR should be maintained atn
- A) 2.5 - 3.5
 - B) 0.5 - 1.5
 - C) 3.5 - 4.5
 - D) 4.5 - 5.5

Q12. All of the following belong to major criteria (Framingham) for diagnosis of congestive heart failure **except**

- A) Positive hepatojugular reflux
- B) Hepatomegaly
- C) Pulmonary rales
- D) S3 gallop

Q13. At the end of the isometric relaxation phase

- A) Atrio ventricular valves open
- B) Atrio ventricular valves close
- C) Corresponds to peak 'c' waves in JVP
- D) Corresponds to T waves in ECG

Q14. **Assertion:** Risk of thrombosis of prosthetic valve is highest in tricuspid location

Reason: Low pressure and low velocity of blood flow across tricuspid valve

- A) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion
- B) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion
- C) Assertion is true, but Reason is false
- D) Assertion is false, but Reason is true

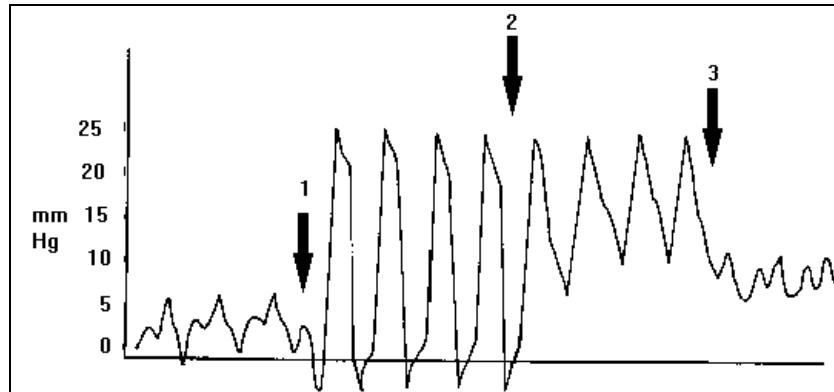
Q15. The number of bronchopulmonary segments in the right lung are

- A) 8
- B) 10
- C) 9
- D) 12

Q16. A 10 year old boy,died of acute rheumatic fever. All the following can be expected at autopsy **except**

- A) Aschoff's nodules
- B) Fusion of the chordae tendinae
- C) McCallum patch
- D) Fibrinous pericarditis

Q17. Given below is a pressure tracing as a pulmonary artery catheter is being inserted.



The site (indicated by numbers) at which the balloon of the catheter is inflated to obtain pulmonary capillary wedge pressure (PCWP)

- A) Site 1
 - B) Site 2
 - C) Site 3
 - D) Any of the above sites
- Q18. The most common primary tumor producing cardiac metastases is
- A) Carcinoma lung
 - B) Leukemia
 - C) Malignant melanoma
 - D) Lymphoma
- Q19. The most useful incision in the main operating room for patients with penetrating cardiac injury is:
- A) Left anterior thoracotomy.
 - B) Right anterior thoracotomy.
 - C) Bilateral anterior thoracotomy.
 - D) Median sternotomy.
- Q20. Prophylaxis for infective endocarditis is indicated in which one of the following
- A) Ostium secundum atrial septal defect
 - B) Permanent intravascular cardiac pacemaker
 - C) Previous coronary artery bypass graft
 - D) Patent ductus arteriosus

- Q21. The most common cause of acquired arteriovenous fistula is
- A) Bacterial infection
 - B) Fungal infection
 - C) Blunt trauma
 - D) Penetrating trauma
- Q22. In video assisted thoracoscooic surgery (VATS) for better vision, the space in the operative field is created by :
- A) Self retaining retractor
 - B) CO2 insufflations
 - C) Collapse of ipsilateral lung
 - D) Rib spacing
- Q23. If pyrazinamide is not included in the initial treatment regimen of pulmonary tuberculosis during pregnancy, the minimum duration of therapy is:
- A) 12 months
 - B) 6 months
 - C) 8 months
 - D) 9 months
- Q24. Myocardial oxygen consumption is determined by all of the following **except**
- A) Heart rate
 - B) Systolic blood pressure
 - C) Contractility
 - D) Left ventricular end-systolic volume
- Q25. Which of the following measurementms **cannot** be used to determine the cardiac output?
- A) Fick's principle
 - B) V/Q Ratio
 - C) Echocardiography
 - D) Thermodilution

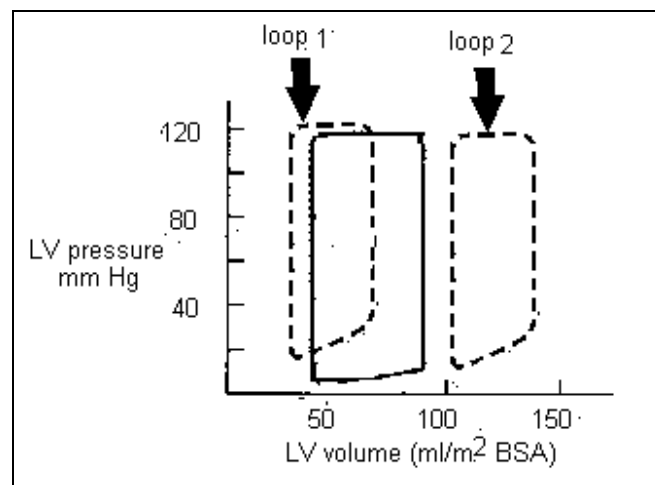
Q26. A bus conductor develops a stroke and has aphasia. He is unable to communicate with passengers and this is found unfit to work and removed from his job. The aphasia, inability to communicate and unemployment corresponds respectively to

- A) Impairment, Handicap and Disability
- B) Disability, Impairment and Handicap
- C) Impairment, Disability and Handicap
- D) Handicap, Disability and Impairment

Q27. One of the following elements is used in preparation of Cardioplegia solutions during cardiac surgery

- A) Helium
- B) Potassium
- C) Boron
- D) Manganese

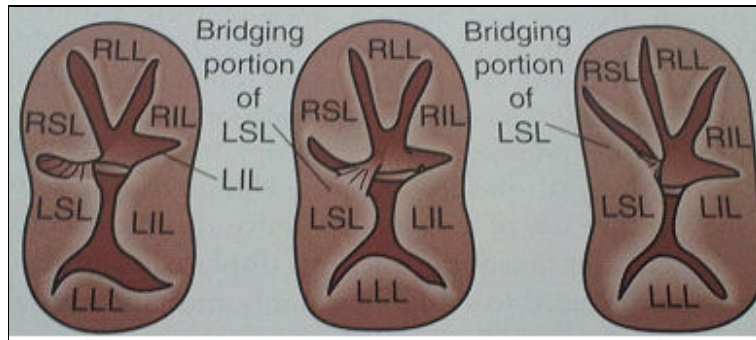
Q28. Given below are two left ventricular pressure volume loops indicated by interrupted lines in two patients (loop 1 and loop 2) with congestive cardiac failure. The loop in normal individuals is indicated by a solid line.



Which of the following statement is **not** true?

- A) Patients with loop 2 require larger end-diastolic volume to produce an adequate stroke volume
- B) Loop 1 is an example of LV dysfunction due to endomyocardial fibrosis
- C) Digoxin is the treatment of choice in patients with loop 1
- D) Carvedilol is useful in treatment of patients with loop 2

Q29. The following figures illustrates which classification:



- A) Darling's classification
- B) Collett - Edwards classification
- C) Rastelli's Classification
- D) Vang Pragh's Classification

Q30. The long, thread-like Ebola virus which causes human hemorrhagic fever belongs to which one of the following families:

- A) Filoviridae
- B) Papovaviridae
- C) Hepadnaviridae
- D) Orthomyxoviridae

Q31. Treatment of hyperkalemia

- 1 Insulin
- 2 Calcium
- 3 Furosemide
- 4 Tramadol

- A) Only 1, 2 and 3 are correct
- B) Only 1 and 3 are correct
- C) Only 2 and 4 are correct
- D) Only 4 is correct

Q32. With regards mitral stenosis

Assertion: Haemoptysis is caused by rupture of thin walled bronchial veins

Reason: Pulmonary hypertension in mitral stenosis results from pulmonary vasoconstriction triggered by left atrial and pulmonary venous hypertension

- A) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion
- B) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion
- C) Assertion is true, but Reason is false
- D) Assertion is false, but Reason is true

Q33. Angiotensin I is converted into Angiotensin II in the

- A) Kidney
- B) Lungs
- C) Liver
- D) Spleen

Q34. **Assertion:** Cardiac rhabdomyoma is associated with tuberous sclerosis

Reason: Rhabdomyoma is the commonest primary cardiac tumor in children

- A) Both assertion and reason are true and reason is correct explanation of assertion
- B) Both assertion and reason are true and reason is not the correct explanation of assertion.
- C) Assertion is true but Reason is false
- D) Assertion is false but Reason is true

Q35. When performing a vascular anastomosis, which one of the following points is **not** true?

- A) Non-absorbable suture material must be used
- B) A smooth intimal suture line needs to be ensured for a good anastomosis
- C) Knots require multiple throws for security
- D) The suture must pass from outwards to inwards on the downflow aspect of the anastomosis

Q36. Patent Ductus Arteriosus arises from

- A) First Aortic arch
- B) Second Aortic arch
- C) Fourth Aortic arch
- D) Sixth Aortic arch

Q37. Pseudoclaudication is caused by :

- A) Femoral artery stenosis
- B) Popliteal artery stenosis
- C) Lumbar canal stenosis
- D) Radial artery stenosis

Q38. A 42-year-old woman has noted progressive exercise intolerance and fatigability. Examination discloses an opening snap in the mitral area suggestive of mitral stenosis. The following is true:

- A) Critical mitral stenosis is defined as an orifice area reduced to 2 cm²
- B) With a fixed mitral orifice, the change from sinus rhythm to atrial fibrillation has little effect on cardiac output
- C) Mural thrombi and thromboembolism are directly related to the presence of atrial fibrillation
- D) Depressed cardiac output is usually due to depressed myocardial contractility

Q39. A young football player presents with debilitating pain in the right groin, extending to the ipsilateral scrotum and upper thigh. There is no history of trauma. On examination, there is tenderness in the right lower abdomen, over the pubic tubercle and upper thigh, but no obvious hernia can be felt. What is the most likely diagnosis?

- A) Acute appendicitis
- B) Right ureteric calculi
- C) Sportsman's hernia
- D) Epididymo-orchitis

Q40. When the sixth (VI) cranial nerve is tested, the action of the following muscle is observed:

- A) Superior rectus
- B) Medial rectus
- C) Lateral rectus
- D) Inferior rectus

Q41. In an ECG trace the PR interval depicts

- A) The onset of the P wave and the termination of the P wave which is 0.12 secs.
- B) The onset of the P wave and the termination of the QRS complex which is 0.3 secs
- C) The onset of the P wave and the peak of the R wave complex which is <0.3 secs.
- D) The onset of the P wave and the onset of the QRS complex which is 0.2 secs.

Q42. Pleural fluid protein of less than 30 gm per litre is suggestive of

- A) Congestive heart failure
- B) Tuberculosis
- C) Pulmonary infarction
- D) Malignancy

Q43. In thoracic aortic dissection false lumen is created in the

- A) Intima of the aortic wall
- B) Adventitia of the aortic wall
- C) Media of the aortic wall
- D) Connective tissues surrounding the aortic wall

Q44. Cardiac output in liters, divided by heart rate equals

- A) Cardiac efficiency
- B) Mean stroke volume
- C) Cardiac index
- D) Mean arterial pressure

Q45. **Assertion** : Spironolactone can decrease mortality in patients suffering from congestive failure

Reason : Aldosterone is involved in cardiac remodeling

- A) Both assertion and reason are true and reason is the correct explanation of assertion
- B) Both assertion and reason are true and reason is not the correct explanation of assertion
- C) Assertion is true and reason is false
- D) Assertion is false but reason is true

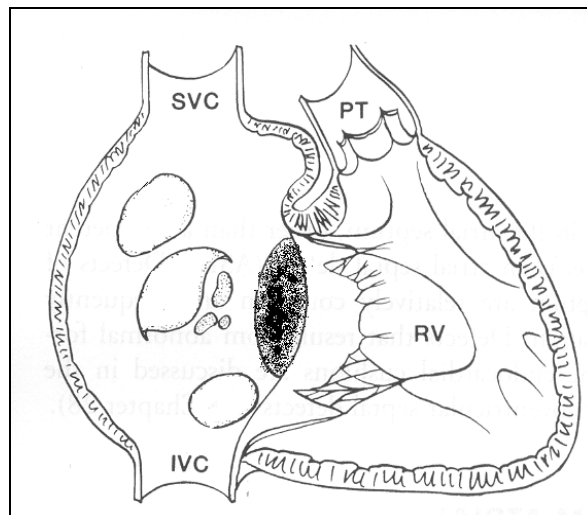
Q46. Of the combinations of valvular heart diseases listed below, which one is most hazardous to the patient

- A) Aortic stenosis with mitral regurgitation
- B) Mitral stenosis with aortic regurgitation
- C) Mitral stenosis with aortic stenosis
- D) Aortic regurgitation with mitral regurgitation

Q47. Balloon atrial septostomy is an important palliation in the surgical management of

- A) Tetralogy of Fallot
- B) Transposition of great arteries
- C) Neonatal coarctation
- D) Pulmonary atresia with intact ventricular septum

Q48. Among the atrial septal defects shown below, the darkly shaded defect is of type



- A) Ostium primum
- B) Ostium secundum
- C) Sinus venosus
- D) Coronary sinus

Q49. During CPR in adults the ratio of chest compression to ventilation is

- A) 10:2
- B) 15:2
- C) 30:2
- D) 50:2

Q50. Regarding anion gap :-

Assertion :- Anion gap = (Na + HCO₃) - (K + CL)

Reason :- An increase anion gap is seen in lactic acidosis.

- A) Both Assertion and Reason are true, and Reason is the correct explanation for Assertion .
- B) Both Assertion and Reason are true, and Reason is not the correct explanation for Assertion .
- C) Assertion is true, but Reason is false .
- D) Assertion is false, but Reason is true.

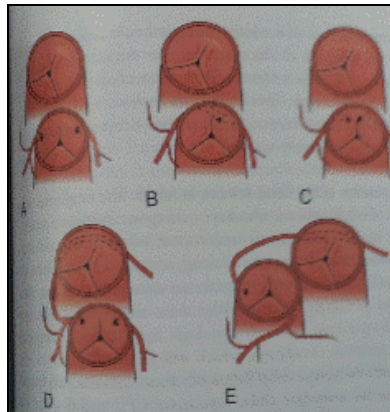
Q51. Pulsus alternans is seen in

- A) Constrictive pericarditis
- B) Cardiac Tamponade
- C) Right ventricular dysfunction
- D) Left ventricular dysfunction

Q52. Osler's nodes in infective endocarditis are seen in

- A) Hands
- B) Pupils
- C) Legs
- D) Fundi

Q53. The above depicted Coronary Anomalies are seen in which disease :



- A) Tetralogy of Fallot
- B) Transposition of Great Arteries
- C) Tricuspid Atresia
- D) Truncus Arteriosus

Q54. Which one of the following structures are noted at sternal angle of Louis?

- 1 Tracheal bifurcation.
- 2 Corresponds to T2 vertebral level
- 3 Aortic Arch
- 4 Origin of left main coronary artery

- A) Only 1,2 and 3 are correct
- B) Only 1 and 3 are correct
- C) Only 2 and 4 are correct
- D) Only 4 is correct

Q55. The first fluid of choice in Acute volume depletion shock is

- A) Balanced salt solution
- B) Albumin
- C) Gelofusine
- D) Blood

Q56. A man with blunt injury abdomen after road side accident has a blood pressure of 100/80mmHg and pulse rate of 120 bpm. Airway has been established and respiration has been stabilized. Next best step in management is

- A) Immediate Blood Transfusion
- B) Blood for cross matching & IV fluids
- C) Ventilate the patient
- D) Rush the patient to the OT

Q57. Most appropriate characteristic of congenital sequestration of lung is

- A) Only upper lobes are involved
- B) Pulmonary artery and bronchus are normal, but pulmonary drainage is to SVC or IVC
- C) Pulmonary artery connection is absent but bronchus and venous drainage are normal
- D) Pulmonary artery is not connected, bronchus may or may not be connected, pulmonary venous drainage is normal with subdiaphragmatic arterial supply from aorta

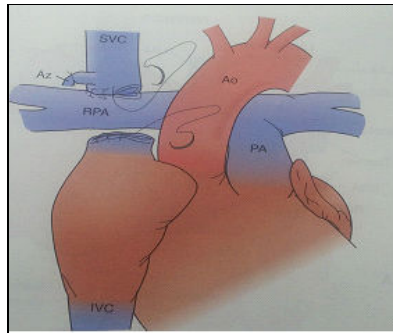
Q58. A patient with tricuspid atresia is to undergo surgery. Possible operations that could be named in the operation list are the following **except**

- A) ASD closure
- B) Bidirectional Glenn Shunt
- C) Pulmonary artery banding
- D) Fontan procedure

Q59. Mitral valve vegetations usually do **not** embolise to

- A) Brain
- B) Liver
- C) Spleen
- D) Lung

Q60. The following shunt operation is :



- A) Blalock - Taussig shunt
- B) Bidirectional Glenn Shunt
- C) Pott's Shunt
- D) Waterston's Shunt

Q61. Protamine is a

- A) Polypeptide
- B) Glycosaminoglycan
- C) Lipopolysaccharide
- D) Serine protease

Q62. Possible complications of Patent ductus arteriosus ligation

- 1 Vocal cord paralysis
- 2 Phrenic nerve paralysis
- 3 False aneurysm
- 4 Deep vein thrombosis

- A) Only 1, 2 and 3 are correct
- B) Only 1 and 3 are correct
- C) Only 2 and 4 are correct
- D) Only 4 is correct

- Q63. True statement/statements regarding extradural hematoma due to burns
- 1 Usually bilateral
 - 2 Skull may be fractured
 - 3 Carboxyhemoglobin is present at the same level as peripheral blood
 - 4 Always associated with intracerebral bleed
- A) Only 1, 2 and 3 are correct
B) Only 1 and 3 are correct
C) Only 2 and 4 are correct
D) Only 4 is correct
- Q64. A middle aged gentleman presents with unnatural bending of the penis and erectile dysfunction. On examination, there are multiple palpable swellings over the shaft of the penis. What is the diagnosis?
- A) Bowen's disease
B) Dupuytren's disease
C) Peyronie's disease
D) Fowler's disease
- Q65. The commonest antero superior mediastinal mass in a 40 yr old woman who has occasional swallowing difficulty is likely due to
- A) Thymoma
B) Neurofibroma
C) Parathyroid adenoma
D) Teratomatous dermoid
- Q66. The highest risk period during organogenesis with regard to structural malformations is:
- A) Preimplantation period
B) Implantation period
C) Embryonic period
D) Fetal period
- Q67. Multiple mediastinal lymphnodes are found in all **except**
- A) Tuberculosis
B) Lymphoma
C) Sarcoidosis
D) Bronchial adenoma

Q68. In which of the following situations will surgery for aortic stenosis **not** be considered

- A) Asymptomatic patient with left ventricular dysfunction
- B) Asymptomatic patient with peak systolic gradient of 30 mmHg
- C) Asymptomatic patient with severe left ventricular hypertrophy
- D) Asymptomatic patient with concomitant coronary artery disease

Q69. Most common tumor arising from posterior mediastinum

- A) Thymoma
- B) Thymolipoma
- C) Sarcoma
- D) Neurogenic tumor

Q70. The Criteria for diagnosis of rheumatic fever are

- A) Dukes university criteria
- B) Duckett jones criteria
- C) Andersons criteria
- D) Wilkinson criteria

Q71. Achalasia Cardia is a disorder of

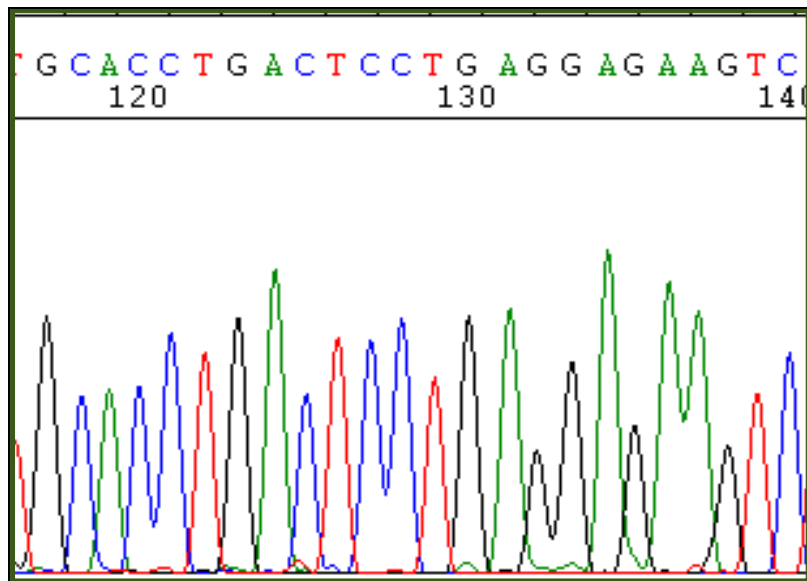
- A) Cardiac valves
- B) Lower esophageal sphincter
- C) Gastro duodenal junction
- D) Cardiac septum

Q72. The following are monitors used for assessment of depth of anaesthesia

- 1 EEG entropy
- 2 Flotrac
- 3 Bispectral Index
- 4 Photoplethysmography

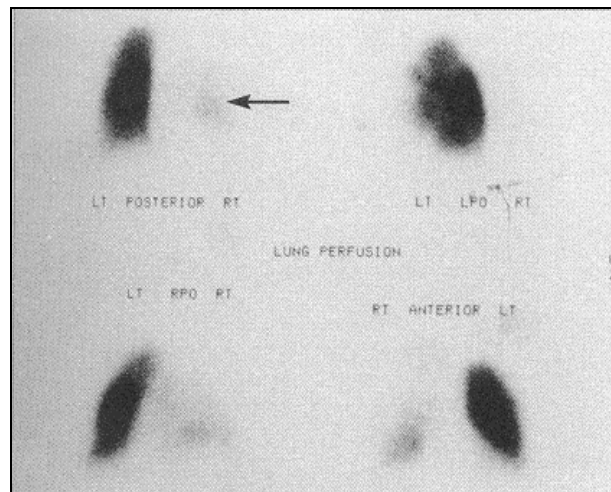
- A) Only 1, 2 and 3 are correct.
- B) Only 1 and 3 are correct.
- C) Only 2 and 4 are correct.
- D) Only 4 is correct.

Q73. The picture shown here depicts a:



- A) Karyotype
- B) Fluorescence insitu hybridization image
- C) Agarose gel electrophoresis picture
- D) DNA sequence chromatogram

Q74. The medical image for diagnosis shown below depicts which of the following investigations

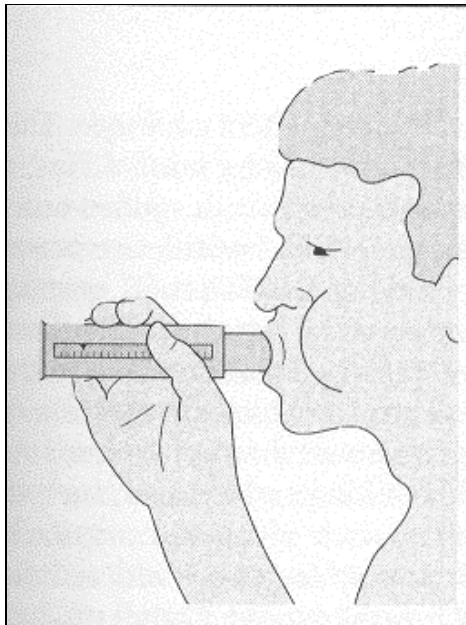


- A) Chest radiograph
- B) Ventilation perfusion scan
- C) Computerised tomogram (CT) of chest
- D) Magnetic resonance imaging (MRI) of chest

Q75. The 'c' wave in the central venous pressure trace is caused by

- A) Right atrial contraction
- B) Tricuspid valve bulging into the atrium as right ventricular pressure rises
- C) Atrial filling during ventricular systole
- D) Opening of tricuspid valve

Q76. The device shown in the figure is used to measure



- A) Vital capacity
- B) Tidal volume
- C) Peak expiratory flow rate
- D) Inspiratory capacity

Q77. A patient presented with local gigantism of the leg and increased pulsations of the lower limb veins; the most probable diagnosis is

- A) Tumor
- B) Arteriovenous fistula
- C) Varicose veins
- D) Incompetence of the saphenofemoral junction

Q78. Which of the following does **not** release nitric oxide?

- A) Hydralazine
- B) Fenoldopam
- C) Nitroprusside
- D) Nitroglycerine

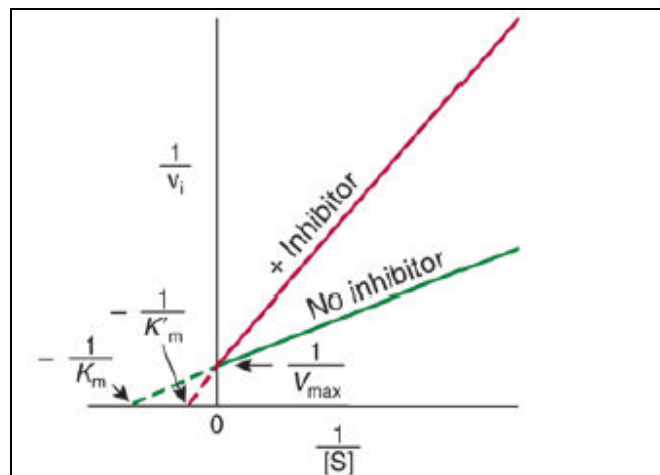
Q79. Pulse less disease is called

- A) Marfan's syndrome
- B) Turner's syndrome
- C) Takayasu's Disease
- D) William's syndrome

Q80. Causative agent of gas gangrene is

- A) Clostridium difficile
- B) Clostridium perfringens
- C) Clostridium tetani
- D) Clostridium butyricum

Q81. Identify the type of enzyme inhibition from the graph.



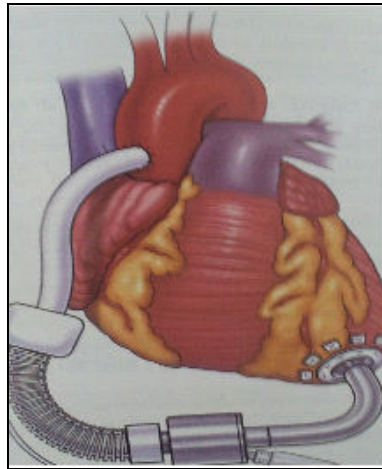
(Lineweaver-Burk plot: V_i -initial velocity, V_{max} - maximum velocity, $[S]$ -substrate concentration)

- A) Uncompetitive
- B) Competitive
- C) Non competitive
- D) Allosteric

Q82. Which one of the following is **not** a major complication of massive transfusion?

- A) Hypokalemia
- B) Hypothermia
- C) Hypomagnesemia
- D) Hypocalcemia

Q83. The device shown in the diagram is

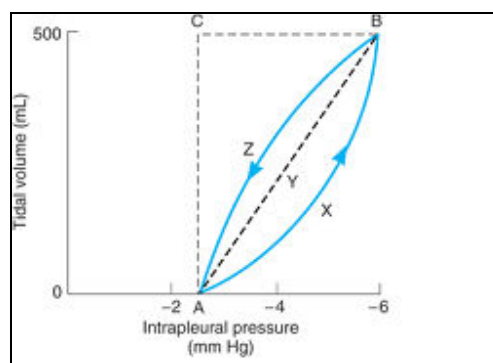


- A) Pace maker
- B) Automatic implantable Cardiac defibrillator
- C) Left ventricular Assist device
- D) Resynchronization device

Q84. The aetiopathogenesis of Dressler's syndrome is

- A) Viral
- B) Bacterial
- C) Fungal
- D) Autoimmune

Q85. Diagram below represents the pressure and volume changes during quiet inspiration (line AXB) and expiration (line BZA).



What does the line Y (AYB) denote

- A) Transpulmonary pressure
- B) Compliance
- C) Vital capacity
- D) Work of breathing

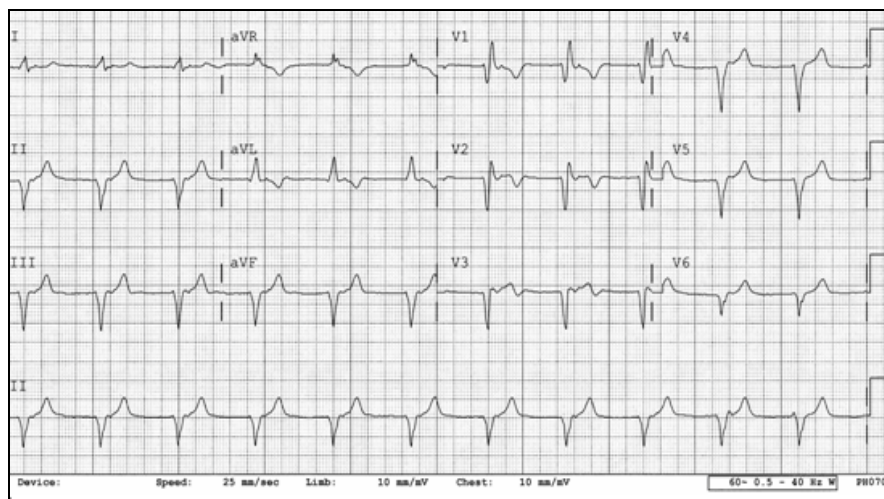
Q86. The SA node is comprised of specialized atrial cells and is situated at

- A) The junction of the left superior vena cava and the right atrium
- B) The junction of the right superior vena cava and the right atrium
- C) The junction of the left superior vena cava and the left atrium
- D) On the upper most portion of the right superior vena cava.

Q87. Treatment modalities for myasthenia gravis can include all the following **except**:

- A) Thymectomy
- B) Guanidine hydrochloride
- C) Immunosuppressive drugs
- D) Corticosteroids

Q88. A 50-year old male patient suffering from acute inferior myocardial infarction manifests the following electrocardiogram as depicted below, one hour after receiving thrombolytic therapy.



The ideal management strategy in this situation is

- A) Lidocaine (lignocaine)
- B) Procainamide
- C) DC cardioversion
- D) No active intervention

Q89. In pneumonias, the infection caused by all of the following organisms may produce tissue necrosis and cavitation **except**

- A) Hemophilus influenzae
- B) Mycobacterium tuberculosis
- C) Staphylococcus aureus
- D) Streptococcus pneumoniae serotype III

Q90. The presence of opening snap in rheumatic mitral stenosis indicates

- A) Calcified mitral valve
- B) Pliable mitral valve
- C) Tight mitral stenosis
- D) Severe pulmonary artery hypertension